MANITOBA AEROSPACE TECHNOLOGY

CAPABILITY DIRECTORY

CANADA

Manitoba
Industry Trade
and Technology

88-03631/

MANITOBA AEROSPACE TECHNOLOGY

CAPABILITY DIRECTORY

Manitoba
Industry, Trade
and Technology

ACQUIRING THE BENEFITS OF THE CANADIAN SPACE PROGRAM

The Canadian Space Program, a four-point approach to active participation in the development of the U.S. space station, communications, remote sensing and space science, offers the potential for significant benefits to Canadian industrial interests of all sizes. In addition, a wide variety of international commercial space projects offers new business opportunities.

For many industrial concerns, the concept of participation in space programs is novel, and perhaps intimidating.

However, a careful examination by industry of the Canadian and international space programs reveals a broad range of industrial opportunities with subsequent industrial spinoff benefits, which should leave the smaller industrialist enthused about this new and challenging venture.

With that in mind, the Manitoba government, through the Department of Industry, Trade and Technology, has launched the Manitoba Aerospace Technology Program, to encourage and assist Manitoba industry in the pursuit of space program-related contract work, to maximize the benefits that flow from such a prodigious venture as the space program, and to demonstrate to program directors the diversity and capabilities of Manitoba's industrial sector.

The program is assisting Manitoba industry by making available all information pertaining to the federal, NASA and other program requirements, as well as information integral to the proper completion of tendering applications, and by assisting industry in liaising with subcontractors.

The full range of departmental services and personnel is available to assist industry in its endeavours.

It is the intent of the program to familiarize space contractors with Manitoba's broad history of involvement in the aerospace industry. And the program will show Manitoba's well-deserved reputation for quality, value, efficiency and excellence in all facets of aerospace work.

The program will show how Manitoba industry and government have built a solid and highly technical infrastructure to serve those seeking or distributing space contract work. Manitoba has the services and facilities needed, ranging from business and industrial incubators, to testing laboratories, to technical and research support, as well as departmental entrepreneurial counselling services.

This publication is an illustration of the potential of Manitoba industry, showing contractors and subcontractors, and Manitoba industrial interests as well, the scope and expertise available in Manitoba.

It is the belief of the Manitoba Aerospace Technology Program that this document will provide impetus to further investigation and inquiries by contractors, subcontractors, other industrial interests and entrepreneurs, and will help in the networking process, so vital to the success of all Manitoba industry.

For Manitoba, the space program represents an opportunity to maximize the potential of the province's aerospace industry, and to encourage its greater diversification.

For the contractors and subcontractors associated with the Canadian Space Program, this is an opportunity to maximize the value and quality of contract work.

Quite simply, all of Canada benefits from Manitoba's full and equitable participation in the space program.

MANITOBA AEROSPACE TECHNOLOGY PROGRAM

For more than fifty years, the Province of Manitoba has been a proud and dynamic contributor to the Canadian aerospace industry, consistently demonstrating our capability and competency on the leading edge of aerospace-related technological developments.

A glance at Manitoba's track record in aerospace reveals pioneering and innovative advances in rocket design, in upper atmospheric balloon experimentation, in satellite structural and component work, in remote sensing and data transmission, and in propellants, exotic material fabrication, and biotechnology.

Manitoba's aerospace sector remains a vibrant and innovative economic performer, and is well positioned to benefit from many of the peaceful applications of space technology, including communications, environmental monitoring, remote sensing and data analysis.

The Manitoba Aerospace Technology Program is in place to encourage and assist the province's industrial, business and educational sectors in acquiring and maximizing benefits flowing from the Canadian Space Program, in order to bring greater industrial diversification and economic growth to Manitoba.

Vic Schroeder

Vic Schroeder
Minister,
Industry, Trade and Technology

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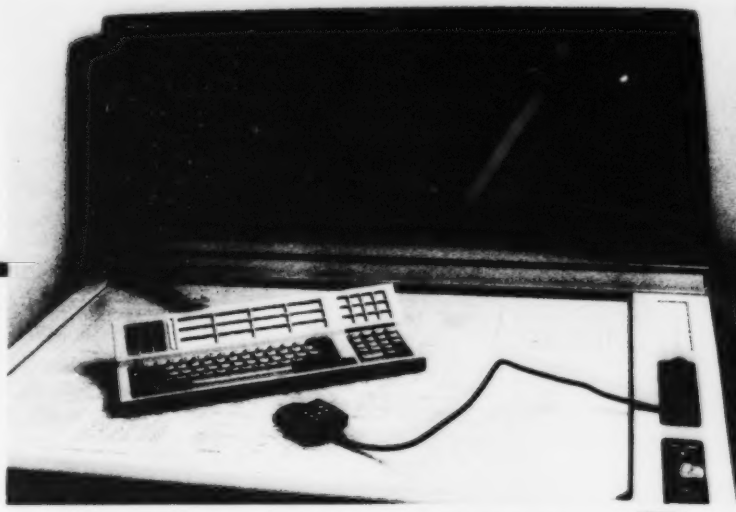

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Note: ● Indicates primary strength (as it relates to space programs)
○ Indicates other strong capabilities

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REMOTE SENSING/COMMUNICATIONS

CURLE GEOGRAPHIC SERVICES

3456 Grant Avenue
Winnipeg, Manitoba
R3R 3C5 Ph: (204) 957-1750

Contact:
Mr. Wayne Curle, President

Description:
Curle, a consulting service offering mapping services, is currently conducting wetlands contour mapping for Ducks Unlimited Canada. Curle specializes in topographic and hydrographic mapping using interpretive contouring techniques (non-photogrammetric). Curle is versed in thematic and planimetric mapping as well as the interpretation of panchromatic, true colour, false colour, and black and white infra-red existing aerial photography. Curle is qualified in mosaic mapping, cartographic drafting, and remote sensing.

Major Clients:
Ducks Unlimited Canada; Manitoba Government; Royal LePage Real Estate; Anderson Management Ltd.

ELECTROMAGNETIC SENSING AND INTERPRETATION

754 Carter Street
Winnipeg, Manitoba
R3M 2C9 Ph: (204) 453-0218

Contact:
Mr. Dave Barber, Principal
Mr. Klaus Hochheim, Manager

Description:
EMSI is an environmental research company specializing in applied remote sensing, including production of a remote sensing imagery catalog, with hydrographic applications. EMSI is involved in the development of remote sensing techniques for the detection and enumeration of arctic marine mammals, sea ice investigations and photogrammetric surveys for engineering and wildlife applications. EMSI has expertise in airborne and space-borne remote sensing applications, in natural resource quantifying and monitoring, in market identification for microwave remote sensing data from the future RADARSAT system, and in aerial verification of satellite operating characteristics.

Major Clients:
Department of Fisheries and Oceans; Environment Canada; Energy and Mines and Resources; Manitoba Natural Resources; Manitoba Remote Sensing Centre

Employees: 4

EM WAVE TECHNOLOGY LTD.

8 Miami Pl
Winnipeg, Manitoba
R3T 3T9 Ph: (204) 474-9603

Contact:
Mr. E. Bridges
Dr. L. Shafai

Description:
Emwave has provided specialist design studies for an electromagnetic anechoic chamber facility for the Canadian Defence Research Establishment, Suffield, Alberta. The firm has experience in antenna phased array studies, antenna feed design, and the development of a radar antenna for the Department of Fisheries and Oceans. Emwave offers specialized R&D support for engineering projects using electromagnetic wave technology. Personnel have experience in antennas, radio and microwave frequency transmission circuits and systems, including the design, analysis, numerical modeling and optimization of systems. It also has experience in the development and management of testing procedures, and interpretation and reporting on test data for prototype components and systems.

Major Clients:
Bristol Aerospace, Winnipeg; Defence Research Establishment, Suffield; Waterloo Research Institute; Danex Micro Inc.; Department of Fisheries and Oceans

Employees: 2

GEC CANADA LTD.

419 Notre Dame Avenue
Winnipeg, Manitoba
R3B 1R3

Ph: (204) 942-7221
Telex: 07-57-588
Fax: (204) 943-6183

Contact:

Mr. R. A. Ashman, President
Mr. D. Pincock, Strategic Marketing Manager

Description:

GEC is involved in the manufacturing and marketing of advanced telecommunications equipment including video conferencing Codecs and room equipment, telephones, key systems, PABX systems, digital switches, smart IC cards, and transportable satellite earth terminals. GEC's British parent firm has experience in designing and manufacturing military communications systems (e.g. Encrypted Transportable Trans-Horizon Microwave Systems), radio systems, radar systems, meteorological systems, and aeronautical training and simulation systems. The firm has full capabilities in PCB manufacturing, metal fabrication and cable forming, as well as design and development engineering staff and facilities.

Facilities:

Manufacturing — 16,000 sq. ft.
Engineering — 5,000 sq. ft.
Marketing and Sales — 6,000 sq. ft.
Administration — 2,000 sq. ft.

Major Clients:

National Research Council of Canada; Bell Telephone; Mountain Bell; GTE; Canadian Telephone Companies

Employees: 61

MACLAREN PLANSEARCH INC.

Ste. 640, 5 Donald Street
Winnipeg, Manitoba
R3L 2T4

Ph: (204) 477-6650

Contact:

Mr. M. McKernan, Senior Scientist

Description:

MacLaren, specializing in environmental impact analyses, ecological monitoring, water quality studies, and remote sensing interpretation, has much experience in the routine use of satellite-derived digical data. The firm has served as technical advisor to a Program Advisory Board responsible for the design and management of a five year program, including remote sensing projects, of ecological monitoring of hydro development impacts on Northern Manitoba. It has provided environmental impact and remediation research for the Canadian Department of National Defence. MacLaren has interests in expanding the use of relevant satellite/airborne/shuttle derived data, focussing at present on ice-related applications. MacLaren Plansearch is a national firm comprised of 103 professional staff, and is part of the Canadian multinational Lavalin Group of companies. It is recognized in EOSAT's inaugural *"Directory of LANDSAT — Related Products and Services; International Edition — 1987"*

Facilities:

Local offices for staff of fifteen (including principal, senior and junior P.Eng.'s, M.Sc.'s, Ph.D., an M.E.Sc., a Mapper/Cartographer and a Dipl. Nat. Res. Mgmnt.); complete drafting equipment; IBM PS/2 model 80 at 20 MHz operation, 20 MHz math coprocessor, 2 Meg Ram, 110 hard disk, VGA high resolution graphics, 14" and 19" high resolution color monitors, local area network, FAX, 18x12 digitizer pad and mouse, 1 Meg memory spooler, HP7595 Draft Master plotter, HP laser printer; IBM PC 640K RAM with 20 Mb. hard disk and assorted software; modem link to national VAX system; access to AUTOCAD and various other computer-based technologies.

Major Clients:

Canadian Department of National Defence; Canada Department of Environment; Manitoba Hydro; Federal and Provincial Governments, ALCAN, ALCOA

Employees:

Employees: 15 locally (103) nationally)

MANITOBA REMOTE SENSING CENTRE

1007 Century Street
Winnipeg, Manitoba
R3H 0W4 Ph: (204) 945-6597

Contact:
Mr. W.G. (Bill) Best, Chief

Description:
The Manitoba Remote Sensing Centre is technologically equipped to map and monitor natural resources, and compile crop condition data in Canada and internationally. Centre personnel are experienced in the use of Image Analysis Systems for satellite data assessment, air photo interpretation, and are familiar with various airborne sensors. Staff have experience in using Landsat and NOAA data, and future plans include the use of systems such as RADARSAT and SPOT. The Centre is working to expand its work in remote sensing relative to agricultural data, natural resource mapping and environmental monitoring.

Will participate on a joint venture basis with companies engaged in remote sensing activities.

Major Clients:
Canada Centre for Remote Sensing; Statistics Canada; Canadian Forestry Service; Canadian Wheat Board; Agriculture Canada; Department of Fisheries & Oceans; Department of Natural Resources, Manitoba; Manitoba Department of Agriculture; Manitoba Hydro; Saskatchewan Research Council; Department of Natural Resources, North West Territories

Employees: 6

MANITOBA TELEPHONE SYSTEM

Technology Development — B609
489 Empress Street
P.O. Box 6666 Ph: (204) 941-8492
Winnipeg, Manitoba T.W.X.: 610-671-0566
R3C 3V6 Fax: (204) 956-0836

Contact:
Markku Murtonen, Manager, Technology Planning

Description:
MTS, a major participant in Telesat Canada and Telecom Canada, has extensive experience in earth station and satellite support telecommunication services. It is a participant in the opportunity assessment of Mobile Satellite (MSAT) remote area services, and serves as advisor to DOC in the review of MSAT & other radio spectrum issues. Through chairmanship of National Study Group 8, CCIB, (Mobile Services), MTS is a direct participant in dialogue and developments in Land Mobile, Mobile Satellite, Radio Amateur Mobile, Maritime Mobile and Aeronautical Mobile systems and services.

NORTHERN TELECOM CANADA LTD.

1455 Mountain Avenue
Winnipeg, Manitoba
R2X 2Y9 Ph: (204) 633-7200

Contact:
Mr. Jim Chesterfield, Plant Manager

Description:
Northern Telecom provides a highly qualified and quality-certified facility for constructing and testing a full range of telecommunications products, including printed circuitry, hybrid/thick film, and custom hybrid design and construction. Northern Telecom is particularly interested in acquiring printed circuit board contracting, as well as work in hybrid printing assembly and laser trimming.

Quality Standards:
Certified for all major QA standards

Employees: 400

PRAIRIE AGRI PHOTO LTD.

292 Main Street
P.O. Box 817
Carman, Manitoba
R0G 0J0 Ph: (204) 745-2009

Contact:
Mr. Jack McKinnon, President/Director

Description:
Prairie Agri Photo specializes in infrared aerial photography and "scenic" aerial photography. Infrared aerial photography enables grain and fruit producers to assess their crops' strengths and weaknesses quickly and accurately. They also offer consulting services on the design and implementation of remote sensing programs on practical matching and data needs and available technologies; and on decisions related to technology transfer.

Featured Equipment:
A Cessna 172 aircraft, four Hasselblad 70 mm IR camera systems and three 6 cm x 7 cm Pentax medium format systems.

Facilities:
Administrative office and full dark room.

Subsidiaries:
Winterhaven, Florida, U.S.A.

Employees: 7

TECHNICAL PRODUCTS INTERNATIONAL LTD.

Bay 4 — 1329 Niakwa Rd.
Winnipeg, Manitoba
R2J 3T4

Ph: (204) 255-0449
Telex: 07-587809
Fax: (204) 255-0479

Contact:
Mr. F. Wellink, President

Description:
TPI is currently involved in the manufacturing of electronic cable assemblies, featuring injection molded ends. In addition to this manufacturing capability, TPI utilizes a fully equipped machine shop for the fabrication of conventional and epoxy-resin mold tooling for prototype and short-run injection molds.

Working within MIL SPECS, TPI has specialized mold fabrication capabilities, and is in the active pursuit of contract work involving the development and/or manufacture of components for computer, telecommunication, and instrumentation applications.

Quality Standards:
MIL-I-45208A
CSA approved shop (File no. LR67481)

Featured Equipment:
a) 20 to 80 ton vertical injection molding machines c/w auxiliary driers and mold temp. controllers.
b) 2-pneumatic driven crimping presses
c) 2-automated wire strippers
d) 1-automated wire stripper/cutter
e) 1-automated wire cutter
f) 1-EDM c/w 3-dimensional orbiting head
g) 1- 3-dimensional milling machine
h) 1-Lathe
i) Surface Grinder

Facilities:
4,000 sq. ft.

Employees: 10

VISUAL MARKETING LTD.

E-1420 Clarence Avenue
Winnipeg, Manitoba
R3T 1T6

Ph: (204) 284-0815

Contact:
Keith McKenzie, President
Darlene Mulligan, Marketing Manager

Description:
Visual Marketing Ltd. produces professional video programs, specializing in corporate communications. They have extensive experience in training, marketing, sales, promotional & conceptual programming for private and public corporations. In addition to full broadcast production facilities they handle scripting, language translations, world standards conversions (PAL-SECAM-NTSC), videotape duplication & film to videotape transfers. They are currently upgrading their facilities to enable them to produce interactive laser videodisc programs.

Facilities:
600 sq. ft. sound studio, cameras, lighting, special effects, editing equipment and electronic field production.

Major Clients:
Boeing of Canada, Noranda Explorations, McKim Advertising, Canada Safeway.

Employees: 4 full time/free lance specialists employed on a per project basis.

ELECTRONICS/BIOTECHNOLOGY/SOFTWARE

ABI BIOTECHNOLOGY INC.

A-1150 Waverley Street
Winnipeg, Manitoba
R3T 0P4

Ph: 477-6413
Fax: (204) 284-1021

Contact:
Dr. B. Friesen, President
Dr. J. Langstaff, Director of Research

Description:
ABI is primarily a research and development laboratory, with specific interest in biological R & D. It is involved in the production of protein-based pharmaceuticals through the biotechnologies of genetic engineering and monoclonal antibodies from mammalian cells in culture.

History:
Founded in 1984 by A.D. Friesen.

Facilities:
Fully equipped 7,000 sq. ft. laboratory

Major Clients:
Ortho Diagnostics Systems Inc., Toronto
Waitaki International Biosciences, Toronto
Winnipeg Rh Institute, Winnipeg
Apotex Pharmaceuticals, Toronto
Biotechnology General Inc., New York

Employees: 24

ADVANCED APPLICATIONS INC.

#03-301 Nassau Street
Winnipeg, Manitoba
R3L 2J5

Ph: (204) 453-4959

Contact:
Dr. Brian D. Prystupa, President

Description:
Advanced Applications is a specialized operation, developing prototypes of high technology wheelchairs, as well as other mobilization aids for the handicapped. Advanced is interested in the development of programming concepts for high level control of machines in space.

Featured Equipment:
Computer programming concepts based on insect/animal learning and intelligence.

Facilities:
Office CAD computer and subcontracted facilities.

Employees: 2

CAD SYSTEMS

National Research Council
435 Ellice Avenue
Winnipeg, Manitoba
R3B 1Y6

Ph: (204) 943-6673
Fax: (204) 943-1568

Contact:
Mr. Allen Lee, President

Description:
CAD Systems is an innovative firm specializing in IBM compatible software development, two and three dimensional business graphics and CAD systems.

Featured Equipment:
Sperry IT's; IBM PS2 Model 80 micro; H.D. coloured pen plotter; Apple laser plotter; XT, AT and compatables

Major Clients:
Northern Telecom; National Research Council of Canada; AT&T; Martin Marietta; Lockheed

Employees: 4

CANMAG

Bay 21, 1865 Sargent Avenue
Winnipeg, Manitoba
R3H 0E4

Ph: (204) 786-5515

Contact:
Mr. P. Klein, President

Description:
Canadian Electromagnetics Ltd. is a Winnipeg based affiliate of K & S Tool and Die Ltd. It was formed to provide a Canadian supplier to meet the international demand for focussing elements in the particle accelerator industry. Since its inception it has provided quadrupole and sextupole magnets to institutions in Canada and Europe. The ability of the Company to manufacture all the components of the finished product makes it unique in Canada.

Facilities:
8,250 sq. ft.

Major Clients:
University of British Columbia (TRIUMF accelerator), West Germany (HERA) and the University of Manitoba

Employees: 6

CHEMFET CANADA LTD.

340 Saulteaux Crescent
Winnipeg, Manitoba
R3J 3T2

Ph: (204) 831-8077
Fax: (204) 831-8069

Contact:
Dr. G. Smith, President

Description:
Chemfet's Winnipeg facility is the world-wide manufacturing operation for the parent firm. Its primary product is chemically sensitive field effect transistors, and sensors for biomedical, industrial and research applications. An industrial representative to NATO, Chemfet is currently working with NASA to develop chemfet sensor technology products for use in the space station program. Chemfet is particularly interested in space technology using Chemfet type sensors. These would include astronaut monitoring, environmental monitoring and feedback, and engine monitoring.

Facilities:
11,200 sq. ft.

Major Clients:
NASA, NATO

Subsidiaries:
United States, Brazil, Japan and Germany

Employees: 20 Canada, 40 United States

CLINICOM COMPUTING SERVICES INTERNATIONAL INC.

208-93 Lombard Avenue
Winnipeg, Manitoba
R3B 3B1

Ph: (204) 942-5335
Fax: (204) 943-5714

Contact:
Dr. Nancy Craven, Senior Consultant
Joan M. Rogers, Director of Marketing

Description:
CCSI is active in consulting, health care computing, system design and acquisition support, technology evaluation, strategic planning, and educational programs. It offers capabilities in research design/methodology, industrial and electronics database/information-communications, economic analysis, management, artificial intelligence, picture processing/image analysis. CCSI is interested in continued expansion in the health care and computing areas, as well as applications of expert systems to on-board diagnosis and management advice; telemetry of physiological data; medical ground support; astronaut health information systems; health status analysis and prediction.

Facilities:
Offices in Winnipeg and Toronto

Major Clients:
Health Sciences Centre, Wpg., George Patton Memorial Hospital, Queen Elizabeth Hospital, B.C. Children's Hospital, Hewlett-Packard (Canada) Ltd.

Employees: 9

CYBERSHARE LTD.

550 Berry Street
Winnipeg, Manitoba
R3H 0R9

Ph: 775-0181
Fax: (204) 889-0311

Contact:
Dr. A. Ballegeer
Director of Operations

Description:
Cybershare, with interest in satellite transmissions, has extensive experience in database services, networking and communications. A highly-skilled technical staff continues work in educational software including CAL and CAI, commercial, engineering and on-line computing services, and professional software application development.

Featured Equipment:
Computers
- Control Data Cyber 180/830
- Honeywell 66/440
- DEC 780 + DEC 785
- IBM MS/DOS Micros

Employees: 90

EXPORT PACKERS CO. LTD.

70 Irene Street
Winnipeg, Manitoba
R3T 4E1

Ph: 477-1830
Telex: 07-58764
Telefax: (204) 475-7740

Contact:
Mr. Ron Tucker, Director of Operations
Mr. L. Carvalho, Manager-Technical Services

Description:
Export Packers, one of few non-US processors to have USDA certification, is a major exporter of food products and pharmaceuticals, serving four continents. An innovator in biotechnology, Export Packers has one of the largest chemical and microbiological quality control laboratories in Canada. It has solid experience in research and development, including enzymatic and micro-protein research, and continues its investigations into new biotechnology products.

Featured Equipment:
Ultrafiltration Equipment, Electrophoretic, High Pressure Chromatography and Freeze Drying.

Facilities:
The ultra-modern Federally inspected egg processing facility in Winnipeg is one of only a handful of U.S.D.A. certified egg processing plants outside of the United States, and this certification attests to the high quality of products while allowing access to the world's largest single export market.

Major Clients:
The company's food processing, wholesaling, and biotechnology industries have established it as a major exporter of food products and pharmaceuticals to four continents.

Employees: 90

HOMESTEAD COMPUTER SERVICES LTD.

1-1420 Clarence Avenue
Winnipeg, Manitoba
R3T 1T6

Ph: (204) 284-9830
Telex: 760-1141
Fax: (204) 453-2459

Contact:
Mr. D. Pound, President

Description:
Homestead is currently involved in the manufacturing of proprietary software and consulting services for the agricultural and financial sectors. Interested in expansion into the aerospace sector, Homestead has developed an Expert System for interpretation of LANDSAT images.

Major Clients:
Federal Land Banks in U.S.A., Sidney Futures Exchange in Australia, Winnipeg Commodity Exchange, Supply and Services Canada.

Subsidiaries:
Dealer network of 14 in Canada and 4 in United States.

Employees: 20

ICAM TECHNOLOGIES CORPORATION

317-435 Ellice Avenue
Winnipeg, Manitoba
Canada R3B 1Y6

Tel: (204) 957-0737
Fax: (514) 697-8621

Contact:
Malcolm Crooks

Description:
Since its inception in 1971, ICAM Technologies Corporation has become a leading developer and supplier of advanced manufacturing software solutions for North America's aerospace, defence and automotive industries.

Quality Standards: N/A

Features Equipment:
ART Graphics Tutorials
Five Axis Apt Processor with Sculptured Surfaces
NC tool Path Verification Utility
Expert System for Post-Processing
Reverse/Conventional Tape Punch Processor
Two Dimensional CAD System
2-1/2 D Integrated CAM System
Flexible Automated Modeling and Scheduling System
Custom Programming Services

Facilities:
Strategically located in the CIIT building, ICAM's modern facility is dedicated to training, research, development and marketing. These facilities are complimented by ICAM's head office located in eastern Canada.

Major Clients:
Canadair
Boeing of Canada
Allied Bendix Corp.
Bell Helicopters
Northrop
McDonnel Douglas
NASA
Sandia National Laboratories

INTERNATIONAL ARTIFICIAL INTELLIGENCE INC.

Canadian Institute of
Industrial Technology
435 Ellice Avenue
Winnipeg, Manitoba
R3B 1Y6

Ph: (204) 947-1766
Telex: 07-587588
Telefax: (204) 983-3154

Contact:
Mr. Tony DeLuca, Director of Marketing

Description:
A company dedicated to artificial intelligence software, capable of providing the integrated hardware, software, systems, consulting, training and contract development expertise.

Major Clients:
Manitoba Cancer Research Foundation

Employees: 53 (1 in Winnipeg)

INVENTRONICS LTD. INTERNATIONAL

1420 Van Horne Avenue East
Brandon, Manitoba
R7A 6A4

Ph: (204) 728-2001
Telex: 07-502787
Telefax: (204) 726-0807

Contact:
Mr. G. Thompson, President
Mr. Murray Boles, Marketing Manager

Description:
Inventronics specializes in fabricating, painting and assembling of sheet metal components and products. Capabilities include vacuum thermo forming of plastics. Have extensive experience in a full range of manufacturing processes including welding of aluminum, some types of stainless steel, wet and powder painting and chromate conversion coating. Products include components, cabinetry and chassis for telecommunications, electronic and electrical equipment, manufactured to MIL SPEC's. Areas of aerospace sector interest are primarily ground support systems.

Quality Standards:
- Quality program AQAP-4
  MIL-I-45208
  MIL-I-45662
- Welding MIG and TIG to MIL-W-1595A
- Coating MIL-C-5541

Facilities:
125,000 sq. ft.

Major Clients:
Raytheon, Litton, Bell Helicopter and Pratt and Whitney, Transport Canada, Supply and Services Canada, 3M Company, Alberta Government Telephones, SaskTel and Saskatchewan Power.

Employees: 140

KRAUS INDUSTRIES LTD.

204 Day Street
P.O. Box 250
Transcona Postal Stn.
Winnipeg, Manitoba
R2C 2Z9

Ph: (204) 224-1616
Telex: 07-57829
Telefax: (204) 222-0846

Contact:
Mr. Dan McCaroll, Director of Operations

Description:
Kraus is experienced in the marketing of specialized electronic products, and wholly owns COMPUTRONICS INTERNATIONAL and COMMAND START. Kraus maintains a full R&D staff, designing, manufacturing and marketing electronics products, with a specialty in microprocessor-based equipment. Geared to small run and mass production, Kraus has extensive penetration in petroleum industry markets, manufacturing a variety of self service consoles, motor fuel dispensing computers, including POS special products such as credit card validation. Kraus, with growing international markets, is looking for subcontracts in areas such as work on printed circuit boards, and smaller assembly work in such areas as sheet metal and wire harnesses.

Quality Standards:
C.S.A. Z299.2

Facilities:
18,000 sq. ft.

Major Clients:
Texaco, Inter City Gas, Petro-Canada, Shell Oil, Canadian Tire Inc.

Subsidiaries:
2 (Toronto, Canada and Dallas, Texas)

Employees: 43

PULSE ENGINEERING LTD.

300 Keewatin Street
Winnipeg, Manitoba
R2V 2R9 Ph: (204) 633-4321

Contact:
Mr. J. Campbell, Vice-President

Description:
Pulse Engineering, with fully equipped Repair and Testing laboratories, functions as a DND-approved Standards Lab, a certified calibration lab, and specializes in electronic instrument repair, including speed meter sales and service. In addition, it has capabilities in working with 300 mph speedmeters, and in CAD, including board design.

Quality Standards:
Department of National Defense approved standards lab.

Featured Equipment:
Certified calibration lab.

Facilities:
Repair and test lab facilities

Major Clients:
Atomic Energy of Canada Limited, Federal Pioneer, Carte Electric, Boeing of Canada, Unisys, Westinghouse, CN Rail, CP Rail, RCMP

Employees: 10

QUANTIC LABORATORIES INC.

200-281 McDermot Avenue Ph: (204) 943-2552
Winnipeg, Manitoba Toll Free: 1-800-665-0235
R3B 0S9 Fax: (204) 957-1158

Contact:
Dr. A. Wexler, President
Mr. Richard Facia, Manager, Marketing

Description:
Quantic Laboratories Inc. is a software development firm interested in aerospace opportunities. It has developed and markets an electronic CAE/CAD software program known as GREENFIELD™ which simulates transmission line characteristics such as cross-talk, ringing, time delay, etc. The simulation tool reduces wasteful prototyping and production delays.

Facilities:
5,000 sq. ft.

Major Clients:
Several of the leading companies in the electronics industry in North America and Europe.

Employees: 14

SOTA ELECTRONICS CORPORATION

12-1325 Markham Road
Winnipeg, Manitoba
R3T 4J6 Ph: (204) 261-3871

Contact:
Mr. Carter Berezay, General Manager

Description:
SOTA Electronics specializes in the design, development and manufacture of electronic components and subassemblies. SOTA has recently developed the capability of manufacturing MIL-spec transformers through an association with Magnetika, Inc. based in Los Angeles, California. This association with Magnetika has also provided SOTA with access to the design, development and manufacture of uninterruptable power supplies.

Facilities:
2,500 sq. ft.

Major Clients:
Magnetika

Employees: 12

SYSLOG INC.

Room 209, 435 Ellice Avenue
Winnipeg, Manitoba
R3B 1Y6

Ph: (204) 943-9698
Fax: (204) 943-9206

Contact:
Ms. M. Akad, Regional Director

Description:
Consulting and development of specialized, turnkey systems and embedded systems for scientific, engineering and industrial automation applications. Microcomputer LAN's and gateways to minicomputers; engineering, installation and h/w sales. The functions performed by these systems include: control, monitoring, alarm, data acquisition, quality assurance, circuit testing, networking, graphic output, and statistical analysis. Design and development of systems for CASE (Computer Aided Software Engineering). Training and consultation in area of automated development methodologies.

Facilities:
Micro and Minicomputer Based environment. (HP, DEC, other) Network of automated development workstations. Hardware development and support laboratory.

Major Clients:
National Research Council of Canada, Spar Aerospace, Department of Defense

Subsidiaries: 1

Employees: 31

VANSCO ELECTRONICS LTD.

661 Century Street
Winnipeg, Manitoba
R3H 0L9

Ph: (204) 775-8831
Telefax: (204) 783-3556

Contact:
Mr. E. Van Humbeck, President

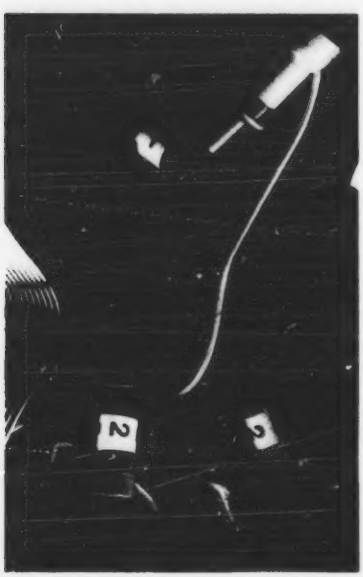
Description:
Vansco, currently involved in industrial and vehicular instrumentation and controls, and in data communications, both in manufacturing and research and development, has had extensive experience with the National Research Council. With R&D workstations on a local area network, and equipped with CAD SOFTWARE for PC layout and field programmable logic, microprocessor development systems, wave soldering equipment, and equipment for connectorizing and insertion of fasteners, Vansco is increasing its focus on product development, (instrumentation and controls) and manufacture of electronic assemblies.

Featured Equipment:
Wave soldering, vapour degreasing, connectorizing and fastener insertion equipment. Encapsulating equipment.

Facilities:
R&D workstations on local area network, CAD software for PC layout and field programmable logic, microprocessor development systems.

Major Clients:
Controlled Environments, Ford New Holland, Transport Canada, Manitoba Hydro, Motor Coach Industries

Employees: 30



METALS & COMPOSITES/FABRICATION

BOEING OF CANADA

99 Murray Park Rd.
Winnipeg, Manitoba
R3J 3M6

Ph: (204) 888-2300
Telex: 07-57309
Fax: (204) 888-2951

Contact:
Mr. M. Sloane, Director Marketing

Description:
Boeing's Winnipeg facility is dedicated to the design, development, fabrication and testing of advanced fibre-reinforced composite material components for a variety of aerospace applications. It also manufactures aerial target systems. It has full engineering design capabilities (CAE and CAD) and has experience in the design and manufacture of satellite and missile components. Aerospace sector involvement would include composites fabrication relative to satellite structures and antenna reflectors.

Quality Standards:
AQAP-4

Featured Equipment:
3 autoclaves (10' x 30' to 15' x 35') automated ultrasonic emmission inspection.

Facilities:
250,000 sq. ft.

Major Clients:
Boeing Commercial Airplane Co., Department of National Defence, de Havilland.

Employees: 1030

CANADIAN TOOL & DIE LTD.

1331 Chevrier Blvd.
Winnipeg, Manitoba
R3T 1Y4

Ph: (204) 453-6833
Telex: 07-587786
Fax: (204) 453-3803

Contact:
Mr. J. Gatschuff, President
Mr. H. H. Roeder, Manager Specialty Engineering

Description:
Canadian Tool and Die has a strong reputation for quality in the manufacture of hydraulic cylinders, hubs, wheels, spindles and related components. For decades, it has been a supplier of component parts and assemblies to military subcontractors. Its highly qualified staff is versed in CAD and CAM systems work, and is interested in expanding production into space technology parts and assemblies.

Quality Standards:
Q.C. Manual to C.S.A. Z299-2 and Department of National Defence DND1016

Facilities:
Large and small wheel manufacturing lines, press department, tool room, hydraulic cylinder test laboratory, cylinder assembly facility, Q.C. department, engineering department and warehouse.
8,000 sq. ft. building
32,000 sq. ft. of compound area

Major Clients:
Versatile & Thomas Equipment

Employees: 125

COMPOSITE TECHNOLOGY (CANADA) LTD.

69 Durand Road
Winnipeg, Manitoba
R2J 3T1

Ph: (204) 661-6412
Telex: 07-587511
Fax: (204) 661-9218

Contact:
Mr. B. Anning

Description:
Composite Technology is the authorized service centre for Bell, Aerospatiale, McDonnell Douglas and Schweizer Aircraft, and is involved in the overhaul and remanufacture of helicopter rotor blades. The company, a current holder of DSS contracts relating to helicopter blade service, is seeking to diversify into other aerospace activities and/or light manufacturing.

Quality Standards:
D.O.T. approved Inspection Organization No. 24-0002 and Defence DND 1015, AQAP-1

Facilities:
20,000 sq. ft.

Major Clients:
Aerospatiale, Agusta, Bell, M.B.B., Sikorsky, MDHC (Hughes), Schweizer

Subsidiaries:
1. Composite Technology International PTE Ltd. (Singapore)
2. Composite Technics, Inc. (Dallas, Texas, USA)
3. Composite Technology, Inc. (Stockton, CA., USA)

Employees: 15

DELRO INDUSTRIES

180 Cree Crescent
Winnipeg, Manitoba
R3J 3W1

Ph: (204) 885-7532
Telex: 07-55287
Fax: (204) 888-4767

Contact:
Mr. R. J. Wright, General Manager
Mr. Ian Sutherland, Marketing Supervisor

Description:
Delro is a producer of diamond drilling supplies and precision custom machining services to a variety of industrial sectors, including the oil and gas industry, both land and marine based, within the aerospace sector, Delro is qualified in machining engine and rocket components, is fully equipped with a range of milling, tooling, turning, welding, and furnacing facilities, in addition to CAD/CAM capabilities and quality control and testing equipment.

Quality Standards:
Meets AQAP-1 Standards

Featured Equipment:
6 CNC lathes, CAD/CAM Applicon System 3000, general machine shop equipment and induction heat treating

Facilities:
17,000 sq. ft.

Major Clients:
Midwest Drilling, Bristol Aerospace Limited, C.M.E. Limited and Cubex Limited

Employees: 70

FRANKLIN ENTERPRISES LTD.

43 Bunting Street
Winnipeg, Manitoba
R2X 2P5

Ph: (204) 633-9838
Telex: 07-57566
Fax: (204) 633-4318

Contact:
Mr. Zoltan Gergely Sr., President
Mr. John Gergely, Marketing Manager

Description:
Franklin Enterprises is a highly qualified engineering and design facility, with extensive experience as a sub-contractor to commercial and military interests within the aerospace sector. Franklin is committed to technological innovation in the machining, fabricating and tool and die industries, and is capable of working with such diverse materials as SPS 245, Inconel Alloy 718, Astroloy, nylons and plastics.

Quality Standards:
Approved to AQAP-4 Standard

Featured Equipment:
CNC Vertical Machining Center, CNC Turning Center

Facilities:
10,000 sq. ft.

Major Clients:
Bristol Aerospace

Employees: 17

HELI FAB LTD.

150 Cree Crescent
Winnipeg, Manitoba
R3J 3W1

Ph: (204) 889-0942
Fax: (204) 888-2912

Contact:
Mr. Raymond Haydaman, President

Description:
Heli-Fab is a specialized welding, sheet metal fabrication and heli-arc welding company serving the aerospace, transportation and communication sectors. Its product line ranges from assembly and sub-assembly fabrication and signal equipment manufacturing, to computer sub-detail manufacturing, and rehabilitation therapy equipment construction.

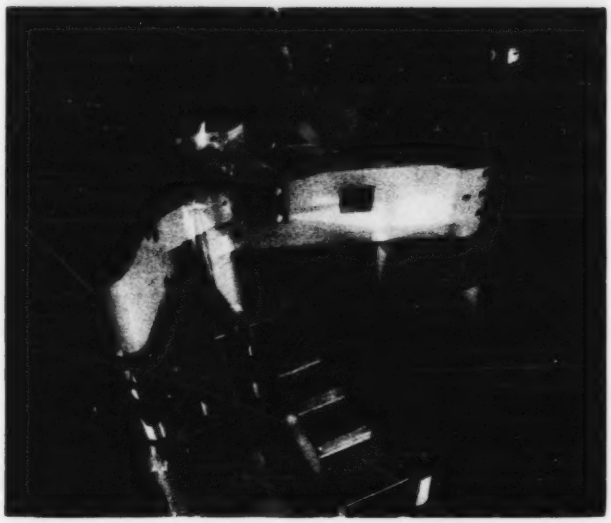
Quality Standards:
Heli-Fab's well-equipped Winnipeg plant offers quality control meeting AQAP-1 standards, and is staffed by qualified and certified personnel.

Featured Equipment:
Three Heli-Arc welders, five semi-automatic welders, one seam welder, one spot welder and sheet metal equipment.

Facilities:
15,000 sq. ft.

Major Clients:
S.E.D. Systems, Raytheon, Bristol Aerospace, M.B.B. Helicopter, Boeing of Canada, Unisys Canada Inc., Otto Bock Orthopedics and Manitoba Hydro.

Employees: 38



K & S TOOL & DIE

Bay 21, 1865 Sargent Avenue
Winnipeg, Manitoba
R3H 0E4 Ph: (204) 786-5515

Contact:
Mr. Peter Klein, President
Mr. John Wilson, Quality Manager

Description:
K & S Tool and Die Ltd. is a privately owned Canadian company which was founded in 1975. The company performs work for a wide range of industries including Aerospace, Electronics, Automobile, Food and Agriculture.

The company specializes in precision work involved Tool and Die, Jigs and Fixtures, Injection, Vacuum and Blow molds, EDM work and machining. K & S Tool and Die Ltd. also specializes in repair of molds, dies and precision tools.

Quality Standards:
AQAP-1 Standards (U.S. MIL-Q-9858A)

Featured Equipment:
7 milling machines, 4 lathes, 2 surface grinders
5 Ex-Cello Ram Turret Milling Machines
1 Induma Universal Milling Machine
1 TOS Universal Milling Machine
2 TOS SN 50 B Universal Center Lathes
1 Summit Universal Center Lathe
1 Standard Modern Lathe
1 DoAll Metal Bandsaw (Vertical)
1 Startrite Metal Bandsaw
1 Heska Metal Bandsaw
2 Horizontal Surface Grinders
1 Oliver Heavy Duty Die Filer
1 Cylindrical Grinder
1 Deckel Grinder
1 Deckel Universal Letter Engraving Machine
1 Charmilles EDM Machine
1 Jig Grinder
1 10 Punch Press
1 35 Ton Hydraulic Press
Various Drill Presses
Inspection Room and Equipment

Facilities:
8,250 sq. ft.

Major Clients:
Bristol Aerospace, Boeing of Canada, Unisys Canada Inc., Northern Telecom Ltd., Otto Bock Othopedics of Canada, and Can Car Rail Inc.

Employees: 14

MANITOU MANUFACTURING CO. LTD.

551 Ferry Road
Winnipeg, Manitoba
R3H 0T5 Ph: (204) 783-2634

Contact:
Mr. Cy Crawford, President

Description:
Manitou has extensive experience within the aerospace sector, specializing in machining components, using NC and CNC equipment. With a strong complement of experienced and qualified machinists and operators, Manitou continues its pursuit of precision component machining.

Quality Standards:
DND-1016 Standard

Featured Equipment:
NC Milling and Turning

Facilities:
12,000 sq. ft.

Major Clients:
Bristol Aerospace, Standard Aero, Boeing, Aero Consulting Services, and A.E.C.L.

Employees: 10

SPECTRUM MANUFACTURING CO. LTD.

495 Madison Street
Winnipeg, Manitoba
R3J 1J2
Ph: (204) 885-5928

Contact:
Mr. H. Unruh, President

Description:
Spectrum with extensive experience in manufacturing metal products for the electronics, telecommunication and computer industries, most recently has completed the Air Traffic Control Centre console installation for Transport Canada. Spectrum is well diversified, with involvement in aerospace hardware for computer installations, exotic paint finishing, ultra finishing, prototype machining, and general metal equipment milling.

Facilities:
14,000 sq. ft.

Major Clients:
Unisys Inc., Bristol Aerospace, Spiroll Kipp Kelly (1984) Inc., Boeing of Canada, Royal Canadian Mounted Police, Kraus Industries, Northern Telecommunications, GEC, Otto Bock, Hydro, etc.

Employees: 28

SPIROLL KIPP KELLY (1984) INC.

1320 Church Avenue
Winnipeg, Manitoba
R2X 1G4
Ph: (204) 694-3084
Telex: 075-7180
Fax: (204) 632-4519

Contact:
Mr. Les Tari, Manager, Engineering Products

Description:
Spiroll Kipp Kelly is a well-established enterprise, offering personnel highly skilled in a state-of-the-art machining of aerospace, defence and electronic industries components. SKK has extensive experience in the production of communication satellite components, rocket motor casings, and helicopter engine components and accessories. SKK, in collaboration with Wardrop Engineering, is positioned to participate in the development of robot mechanisms, and technologies relating to automated test equipment and qualification strategies.

Quality Standards:
To MIL-I-45208A and AQAP-4, full traceability/S.P.C.

Featured Equipment:
Bar-code driven shop floor control. Fully integrated Honeywell Distributed Manufacturing and Financial Systems (HDMS, HDFS), 4 axis machining centers, CAD-CAM Compatible 1-CAM, B241 co-ordinate Measuring Machine (CMN).

Facilities:
25,000 sq. ft.

Major Clients:
Raytheon, Bristol Aerospace & Boeing

Employees: 65

STANDARD MACHINE WORKS LTD.

660 St. Matthews Avenue
Winnipeg, Manitoba
R3G 0G8 Ph: (204) 783-7001

Contact:
Mr. Norm Bickell, President

Description:
Standard Machine Works is universal in its industrial scope, providing a complete range of machining, manufacturing, tooling and welding services, including custom engine rebuilds. Standard Machine has experience in the provision of precision tooling for the aerospace sector. Its fully qualified machinists and mechanics have extensive experience in industrial, marine, and military applications of machine services.

Featured Equipment:
T.I.G. and M.I.G. Welding Equipment

Facilities:
13,000 sq. ft.

Major Clients:
Standard Aero, Bristol Aerospace, Tupperware, Canadian Pacific Railways and Manitoba Hydro

Employees: 24

VANGUARD INDUSTRIES

530 Sheppard Street
Winnipeg, Manitoba Ph: (204) 633-2546
R2X 2P8 (800) 665-7618

Contact:
Mr. A. Sommer, Chairman

Description:
Vanguard's large Winnipeg plant manufactures a range of fibre-glass materials, including boats and other recreational products. Vanguard, a DSS-approved bidder, and with a QC program in place, is qualified in mould design and construction, and vehicle assembly, and has capabilities for ground station equipment manufacture.

Quality Standards:
Approved bidder for DSS

Facilities:
80,000 sq. ft.

Major Clients:
C.A.E.

Employees: 50

MATERIALS/COATINGS/HEAT TREATING

CADORATH PLATING CO. LTD.

2150 Logan Avenue
Winnipeg, Manitoba
R2R 0J2

Ph: (204) 633-9420
Fax: (204) 632-0323

Contact:
Mr. G. Cadorath, President

Description:
Cadorath Plating is a well established facility in Winnipeg specializing in electroplating for industry and agriculture. It has DND approval for electroplating work in chrome, silver, cadmium, sulphamate nickel, electroless nickel, zinc-chromate, nickel, copper, tin and lead indium.

Featured Equipment:
Salt spray cabinet test facility.

Facilities:
25,000 sq. ft.

Major Clients:
Standard Aero, Bristol Aerospace

Employees: 30

FORT GARRY INDUSTRIES LTD.

460 McPhillips Street
Winnipeg, Manitoba
R2X 2G8

Ph: (204) 586-8261
Telex: 075-7594
Fax: (204) 956-1786

Contact:
Mr. R. Spitzke, President

Description:
Primarily involved in servicing the trucking industry, FGI has also been involved in aerospace, manufacturing forming bags used in packing insulation for Bristol Aerospace's Black Brant Rocket, the CRV7 rocket and the 17KS engine. Equipped with CAD and a full R&D staff complement, FGI has capabilities in breaking, punching, forming and welding of steel and aluminum, rubber and urethane coating, rubber molding and extrusion, and rubber to metal bonding. FGI is interested in ground support vehicles, vehicle equipment specialization, and specialized rubber base component applications.

Facilities:
24,000 sq. ft. Manufacturing, 30,000 sq. ft. Warehouse

Major Clients:
Bristol Aerospace

Subsidiaries: 6

Employees: 160

GUERTIN BROS. COATING & SEALANTS LTD.

50 Panet Road
Winnipeg, Manitoba
R2J 0R9

Ph: (204) 237-0241
Telex: 07-55172
Fax: (204) 233-5051

Contact:
Mr. Tony Guertin Sr., President

Description:
Guertin Bros. Coating & Sealants Ltd. specializes in the manufacture of paint and related products, aerosol packaging, industrial coatings, adhesives, caulks and tapes. They supply autoclaving caulks and tapes to the aerospace industry.

Facilities:
74,000 sq. ft.

Major Clients:
Boeing Aerospace, Bristol Aerospace, Heath Techna, McDonnell-Douglas, Canadair

Employees: 80

PLASMA FLAME COATINGS LTD.

1975 Logan Avenue
Winnipeg, Manitoba
R2R 0H8

Ph: (204) 632-5515
Telex: 07-587870
Fax: (204) 943-6915

Contact:
Mr. J.W.J. Blott, President

Description:
Plasma Flame Coatings Ltd. do plasma and flame coatings on specialty parts for the paper, mining and aircraft industries.

Quality Standards:
Have QC program, QA manual and are a DSS approved bidder.

Featured Equipment:
Engine lathe 55' long and 66" diam. capacity; plasma transferred arc hard facing facility; complete blasting equipment.

Facilities:
18,000 sq. ft.

Subsidiaries: 1

Employees: 21

ENGINEERING CONSULTANTS/R&D LABS

A.J.P. ENGINEERING SERVICES

203-675 Pembina Highway
Winnipeg, Manitoba
R3M 2L6

Ph: (204) 477-4405
Fax: (204) 477-4890

Contact:
Mr. A.J. Pankratz, President

Description:
A.J.P. Engineering Services provides a broad range of technical services to industrial clients in Northern Ontario and Manitoba. The company specializes in welding technology and weld inspection. It has worked to military standards for aerospace clients.

Quality Standards:
Level 3 inspection for C.S.A. W178, A.S.M.E. standards, C.S.A. Z299

Facilities:
Autocad design/drawing systems, word processing.

Major Clients:
Euroway, Heli-Fab, Dominion Engineering, Suncor Transport Canada

Employees: 6

LESTER M. GLANTZ, P.ENG. CONSULTANT

512 Bower Blvd.
Winnipeg, Manitoba
R3P 0L8

Ph: (204) 889-2071

Contact:
Mr. Les Glantz, Consultant

Description:
L. Glantz is an aerospace business consultant providing management, technical, marketing and technology transfer services to both Canadian and International aerospace companies.

INSTITUTE FOR TECHNOLOGICAL DEVELOPMENT

Faculty of Engineering
University of Manitoba
Winnipeg, Manitoba
R3T 2N2

Ph: (204) 474-6200
(204) 943-8482
Fax: (204) 261-3475

Contact:
Mr. Ray Hoemsen, R&D Program Coordinator

Description:
Working as a part of the Faculty of Engineering, University of Manitoba, the Institute for Technological Development (ITD) is expert in technology transfer and industrial liaison in technological development. The ITD, functions as a facilitator to help industry to access the technological resources of the University of Manitoba, particularly in Engineering. The ITD also acts as a primary contact for the U of M with the Canadian Space Program.

The ITD, through a Contribution Agreement with the NRC, can help industry obtain scientific and technical knowledge, advice and assistance on a confidential basis.

The ITD also works closely with the Canadian Patent Office and the Canadian Industrial Innovation Centre.

IRIS SYSTEMS

435 Ellice Avenue
Winnipeg, Manitoba
R3B 1Y6

Ph: (204) 947-9064
Fax: (204) 983-3154
Attn: Iris Systems

Contact:
Mr. Michael Wiebe, President

Description:
Iris Systems, management consultants for voice, data and video systems in aerospace, medicine, office automation, and utility services, offers an extensive in-house database, VAX computer capabaility for PCB design, and an electronics R&D laboratory and testing equipment. With previous DOC and NASA contract work, Iris is a qualified participant in the aerospace industry, in such areas as electronics design, finance, regulatory analysis, legal issues, government program use, and venture capital. Iris is primarily interested in facilitating technology licensing or joint ventures, conducting market or technology feasibility studies, and program management.

Major Clients:
DOC and NASA

Employees: 2

MIDWEST POWER PRODUCTS

1460 Waverley Street
Winnipeg, Manitoba
R3T 0P6

Ph: (204) 452-8244
Telex: 07-57726
TWX: 610-671-3579
Fax: (204) 452-2153

Contact:
Mr. B. D. Norrie, Vice-President/Sales Manager

Description:
A division of Midwest Detroit Diesel Ltd., Midwest Power produces packaged power systems utilizing General Motors "Detroit Diesel" or "Electro-Motive" diesel engines, as well as "Isuzu Diesel" engines. With worldwide market penetration, CSA approved products, and a QC program and QA manual in place, Midwest Power is providing quality service to the hydro electric, petroleum, mining and service sectors.

Quality Standards:
Have QA manual and QC program. Are an approved DSS bidder.

Specialized Equipment:
Vibration diagnostic equipment, Electric load banks capacity to 3500 KW

Facilities:
37,000 sq. ft.

Major Clients:
Northern Canada Power Commission, Shell Canada Resources, B.C. Hydro, Gulf Canada Resources, Imperial Oil Services, Quebec Iron and Titanium, Bank of Montreal, Dome Petroleum, Manitoba Hydro and Saskatchewan Power Corporation.

Subsidiaries: 4

Employees: 65

SPIECE ASSOCIATES INC.

17-18 Windmill Way
Box 268, Station A
Winnipeg, Manitoba
R3K 2A1

Phone: (204) 895-7743

Contact:
Mr. E.L. (Gene) Spiece, President

Description:
Spiece, currently on contract assignment with the Manitoba government, specializes in management and consultative work, strategic planning, product marketing, and information retrieval, with particular emphasis on the aerospace sector.

Featured Equipment:
Electronic information retrieval

Employees: 2

TARRY & ASSOCIATES LTD.

1209-600 Setter Street
Winnipeg, Manitoba
R2Y 2H7

Ph: 889-0346

Contact:
Mr. R. J. Tarry, President

Description:
Tarry & Associates has twelve years experience as general management consultants, specializing in marketing, business planning, feasibility studies, government liaison and program evaluations. And, with considerable direct experience in the Canadian and U.S. aerospace industries, specializing in electronics, computers and space craft instrumentation, Tarry & Associates is seeking further opportunities in aerospace business and market research planning, and project management.

TECHNICAL RESEARCH INVESTIGATIONS & DEVELOPMENT (TRIAD) LTD.

787 Haney Street
Winnipeg, Manitoba
R3R 0Y7

Ph: (204) 885-6099
Telex: 075-87870
Fax: (204) 943-6915

Contact:
Dr. E. Thompson, President

Description:
TRIAD Ltd. is an R&D oriented consulting firm, specializing in materials, electronics and chemistry, and marketing rapidly solidified filaments, foils, flakes and powders of various alloys including titanium.

Employees: 3

UMA ENGINEERING LTD.

1479 Buffalo Place
Winnipeg, Manitoba
R3T 1L7

Ph: (204) 284-0580
Telex: 07-57562
Fax: (204) 475-3646

Contact:
Mr. Carl Anderson

Description:
UMA Engineering Ltd. is the principal company of the UMA Group offering expert and diverse engineering capabilities ranging from structural, mechanical, electrical, instrumentation, agricultural, construction management, engineering surveying, environmental, civil, transportation, planning, landscape architecture, geotechnical, geological, hydrogeological and remote sensing.

Within the aerospace sector, UMA is active and interested in industrial plant design, construction management, remote sensing and satellite imagery analysts and other work related to engineering and environmental applications.

1) Computer facilities within the Company include a Prime 750 installation and two Prime 450 installations, all networked through Datapac, and accessed by high speed terminals in the various offices. It also includes IBM PCs with up to 512 K of memory and an IBM AT with 640 K of memory, and 30 Mb of hard disk storage and 1 Laser jet printer.
2) Complete photogrammetric mapping services are offered through Western Photogrammetry, a division of UMA Engineering Ltd. Equipment currently consists of a Wild BC1 Analytical Stereoplotting System Controlled by a Nova 4X Mini-Computer; a Wild A10 Semi-Analytical Stereoplotting Instrument; a Zeiss Jena Stereometrograph — 1st order plotter; a Wild B85 Stereoplotting Instrument; and the PATM-43 Block Adjustment program for aerial triangulation.

Facilities:
38,000 sq. ft.

Subsidiaries: 10

Employees: 110

UNIES LTD.

1666 Dublin Avenue
Winnipeg, Manitoba
R3H 0H1

Ph: (204) 633-6363

Contact:
Mr. Gordon Spafford, Mr. Gary Proskiw

Description:
UNIES Ltd., consulting engineers, specialize in remote sensing interpretation, building technology, energy systems and analysis, water management, hydraulics and hydrology, software development. Current facilities, which include air quality monitoring equipment and building envelope & mechanical systems testing equipment, are supportive of company efforts to increase involvement in energy control and supply.

Facilities:
4,000 sq. ft.

Major Clients:
Manitoba Government, Canadian Government, construction industry, legal

Employees: 7

UNIVERSITY OF MANITOBA ACCELERATOR CENTRE

Room 223, Allen Building
Winnipeg, Manitoba
R3T 2N2

Ph: 474-9378 or 474-9817

Contact:
Dr. Jasper S. C. McKee, Director

Description:
The Accelerator Centre has the capacity to simulate the solar winds and measure the effect of proton bombardment in materials and computer components. The Centre has access to neutral hydrogen beams of high flux for civil studies, and is capable of microbeam analysis of materials. Centre staff are expert in vacuum technology, ion source development, computer control, software generation and other aspects of accelerator physics and technology. Current Centre projects include production of radiopharmaceuticals, elemental analysis of medical tissue and ore bodies, research using neutral beams, and implantation studies.

Featured Equipment:
Spiral Ridge Cyclotron (20-50 Mev protons) and a Linear Ion Implantation Accelerator (120 keV)

Major Clients:
Canadian Federal Government

Employees: 5

WEST-CAN INSPECTION LIMITED

22 Ranch Road
Winnipeg, Manitoba
R2G 3E1

Ph: (204) 668-7327
Telex: 07-57741 (Brick House)
Fax: (204) 338-8846

Contact:
Mr. Edward Wachal, General Manager, Western Division
Mr. Larry R. Russell, V.P. Technical Operations

Description:
West-Can Inspection is a testing laboratory, offering quality assurance inspection and non-destructive analysis of materials and components. West-Can is experienced in aircraft structural inspection, rocket motor testing, and various cast product inspection, carried out by a skilled, certified staff utilizing a full range of non-destructive test equipment. Its prime interests within the aerospace technology program are the research and development of new materials and component fabrication for engineered segments of the program.

Featured Equipment:
Non-destructive Test Methods Radiographic, Ultrasonic, Eddy Current, Liquid Penetrant, Magnetic Particle

Facilities:
1500 sq. ft.

Major Clients:
Imperial Oil, Trans Canada Pipeline, Bristol Aerospace, Standard Aero, Air Canada

Subsidiaries: 3

Employees: 20

WOODGREEN TECHNOLOGIES

71 Woodgreen Place
Winnipeg, Manitoba
R3J 1H4

Ph: (204) 832-2910

Contact:
Mr. Norman Erskine, General Manager

Description:
Woodgreen Technologies provides consulting and business development services to the aerospace industry. Capabilities include but are not limited to:

a) Feasibility studies
b) Project management and administration
c) Engineering manual preparation
d) Electrical engineering, microelectronics and software
e) Design and management of rocket payloads

Facilities:
Office

Associates: 3

G.K. YUILL & ASSOCIATES LTD.

1441 Pembina Highway
Winnipeg, Manitoba
R3T 2C4

Ph: (204) 474-2461
Fax: (204) 453-0691

Contact:
Dr. G.K. Yuill, President

Description:
G.K. Yuill & Associates Ltd. is a research and development consultant providing mechanical engineering services to a wide range of Canadian firms. They specialize in computer models and test methods for heat transfer and thermodynamic problems.

Major Clients:
National Research Council

Employees: 10

PROJECT MANAGEMENT

ATOMIC ENERGY OF CANADA

Whiteshell Nuclear Research Establishment
Pinawa, Manitoba
R0E 1L0

Ph: (204) 753-2311
Telex: 07-57553
Fax: (204) 753-8404

Contact:
Mr. R. Sochaski, P. Eng., Manager, Commercial Operations

Description:
The WNRE, at Pinawa, Manitoba, operated by Atomic Energy of Canada Ltd., is a diverse facility with a broad range of technological capabilities. With experience in joint venture and partnership arrangements, WNRE offers metallurgical and mechanical testing facilities, with expertise in ferrous and non-ferrous metals, ceramics, glasses, rocks and composites. The centre has physical-mechanical testing facilities, surface profilometry, thermal analysis and viscosity measurement, electron microscopy, acoustic emission, and fracture mechanics. Its chemical facilities include micro-analytical, radiochemical, neutron activation, mass spectrometry, atomic absorption spectroscopy, along with scanning electron microscopy, scanning auger microscopy, secondary ion mass spectrometry and photoelectron spectroscopy. The centre operates a gamma irradiator, a Van de Graaf accelerator, and a fast neutron generator. The WNRE also conducts combustion testing, design and project engineering research, and special process and fabrication. In addition it has the following:

- Experience in power conversion systems suitable for space applications using either photovoltaic, radioisotopic or nuclear reactor power systems.
- Experience in determining the effects of Atomic Oxygen and Radiation on material and living systems and recommending methods to alleviate these effects.
- Experience in vibration analysis and the application of High Damping materials including composites to suppress unwanted vibrations and/or noise.
- Use of Radiation Curing of plastics and composite materials to produce unique materials for special space applications.
- Biophysical research with experience in virology, cell biology, radiobiology, biochemistry and biophysics.
- Thermalstructural analysis using advanced finite element codes.
- Hydrostatic test facility.

The centre's broad capabilities are well suited to a variety of space program projects, with staff offering experience in space nuclear power supply research, organic working fluid thermal and radiolytic stability, radiation dose and shielding assessment, heat pipes and technology transfer and training. The centre has a fully accredited QA department capable of meeting the needs of highly specialized projects.

Subsidiaries: 3

Employees: 1000

BRISTOL AEROSPACE

P.O. Box 874
Winnipeg, Manitoba
R3X 2N4

Ph: (204) 775-8331
Telex: 07-57774
TWX: 610-671-3598
Fax: (204) 885-3195

Contact:
Mr. Ralph Bullock, Vice President Engineering
Mr. R. G. Catlin, Director of Electronic Technology

Description:
Bristol Aerospace is a cornerstone on which the aerospace sector of Manitoba is built. Bristol, with an engineering and manufacturing plant in Winnipeg, and a rocket propellant manufacturing facility in Rockwood, is a Canadian pioneer in rocket research. A diversified operation, Bristol is a leader in aircraft repair and overhaul, jet engine and airframe component manufacture, engineered products manufacture, space science systems and rocket and propulsion systems. It has extensive experience in the full range of aerospace products, with an experienced and efficient work force, skilled in structures, electronics, materials, manufacturing technologies, systems engineering, propulsion and aerodynamics. Bristol is dedicated to space science rocket application, systems engineering and manufacturing programs for space station or other space-related projects.

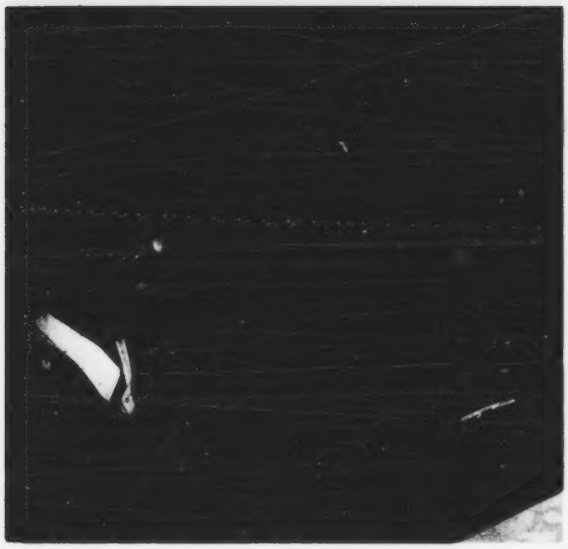
Quality Standards:
AQAP-1, DND1015, MIL-Q-9858A

Featured Equipment:
CNC machining stations, CAD/CAM design, electron beam welding, non-destructive testing (i.e. ultrasonic, C-Scan, eddy current, in-motion radiography, magnetic particle, fluorescent penetrant)

Facilities:
700,000 sq. ft.

Major Clients:
NASA, ESA, National Research Council, AECL, Canadian Government

Employees: 1400



CANADIAN FOOD PRODUCTS DEVELOPMENT CENTRE

810 Phillips Street
Portage la Prairie, Manitoba
R1N 3J9

Ph: (204) 857-7861
Fax: (204) 239-5183

Contact:
Mr. Terry Smyrl, Industrial Technology Advisor

Description:
The CFPDC, a division of the Manitoba Research Council, is located in Portage la Prairie, Manitoba. It offers to public and private sector interests access to food product and processing development laboratories, and library facilities. The Centre conducts chemical and microbiological analyses, food product development, process engineering, food quality testing, and provides technology transfer services. It has the capability to develop food products which can be consumed in a microgravity environment such as a space station, and to evaluate bulk packaging systems and develop techniques to sanitize utensils and containers in a microgravity environment.

Subsidiaries: 1

Employees: 35

INDUSTRIAL TECHNOLOGY CENTRE

Manitoba Research Council
1329 Niakwa Road
Winnipeg, Manitoba
R2J 3T4

Ph: (204) 945-6136
Fax: (204) 945-1784

Contact:
Mr. Lawrence Haberman, Director

Description:
The Industrial Technology Centre, a laboratory and office complex, including machine shops, is active in applied research, product development and testing, prototype development and fabrication, chemical technology, electrical/electronic development, mechanical design and analysis, technological assistance, as well as information services for industrial and governmental interests. The Centre is expert in biotechnology, chemical technology, CAE, electronics engineering, mechanical engineering and materials engineering. The highly qualified Centre staff is experienced in thermal analysis of electronic components using computer modelling, and the design of "packages" (to DND/MIL specs) for electrical components. The Centre is capable in the design and development of analog and/or digital electronic products, as well as software development, from microprocessor to mainframe applications.

Featured Equipment:
Computerized Gas Chromatograph/Mass Selective Detector (HP), Vibration Analysis equipment (Zonic), VAX 11/780, c/w SDRC-1-DEAS, CalmaDDM, Racal-Redac Relog & Red Board, MTS

Facilities:
32,000 sq. ft.

Major Clients:
Westinghouse, IDRC, Intercity Gas

Subsidiaries: 0

Employees: 40

RED RIVER COMMUNITY COLLEGE

C-7th Floor
2055 Notre Dame Avenue
Winnipeg, Manitoba
R3H 0J9
Ph: (204) 632-2291

Contact:
Mr. Glen Hermanson, Dean, Technology

Description:
RRCC is a comprehensive technical institute, with electronic laboratories, machine shops, a fully equipped manufacturing centre, and a CAD/CAM centre, with intergraph. RRCC offers extensive training opportunities in computer technologies, metallurgy, and the aerospace sector. It is fully capable of assuming prototype design work and training.

Featured Equipment:
Manufacturing centre, CAD/CAM (Intergraph), electronics labs

Facilities:
College serving 25,000 students

Major Clients:
City of Winnipeg, Canadian Bronze, Delro Industries, Unisys Inc.

Employees: 650

SOUTH WINNIPEG TECHNICAL CENTRE

130 Henlow Street
Winnipeg, Manitoba
Ph: (204) 488-2451

Contact:
Mr. Cy Howard, Assistant Director, Adult Training

Description:
South Winnipeg Technical Centre offers training and education in various industrial and business disciplines, including CAD, CAM, CNC manufacturing, automated systems, robotics, and electronics. SWTC staff include professional engineers, technologists, technicians, and journeymen. The Centre is in consultation with the aerospace sector, in the continued development of customized courses leading to improved efficiencies and skills of sectoral workers.

Employees: 50

STANDARD AERO LIMITED

33 Allen Dyne Rd
Winnipeg, Manitoba
R3H 1A1
Ph: (204) 775-9711
Telex: 07-57878
Fax: (204) 783-1421

Contact:
Mr. Richard T. Davies, Manager, Engineering Product Support

Description:
Standard Aero, a pioneer in the Western Canada aerospace industry, is an acknowledged specialist in the repair and overhaul of gas turbine engines and airframe components, serving both civilian and military interests. AQAP-1 certified, its experienced staff of engineers work in close cooperation with personnel of Standard Aero's affiliate centres, which are located across North America, and in England.

Quality Standards:
AQAP-1, Quality Approval DGQA

Facilities:
270,000 sq. ft.

Subsidiaries: 12

Employees: 810

UNISYS CANADA INC.

Defence Systems
200 Saulteaux Crescent
Winnipeg, Manitoba
R3J 3W3
Ph: (204) 888-4222
Fax: (204) 885-4334

Contact:
Mr. Ron Guimond, Director of Marketing

Description:
UNISYS Canada Inc., Defence Systems, has extensive experience in the development and supply of computer hardware, ruggedized electronic processing equipment, and complex computer systems with broad military and civilian applications. UNISYS products touch on a broad range of economic sectors, including MIL spec hardware, signal processing hardware, local area networks, communications systems, advanced systems architecture, and systems design.

Quality Standards:
AQAP-1 and AQAP-13

Featured Equipment:
Application Specific Integrated Circuit (ASIC) Design Centre

Facilities:
79,430 sq. ft.

Major Clients:
Lockheed Corporation, U.S. Navy, Canadian Department of National Defence, Paramax, Litton Systems, and British Ministry of Defence

Employees: 420

WARDROP & ASSOCIATES

77 Main Street
Winnipeg, Manitoba
R3C 3H1
Ph: (204) 956-0980
Telex: 07-57487
Fax: (204) 957-5389

Contact:
Mr. D. Grimes, President
Mr. R. Foster, Associate

Description:
Wardrop Engineering Inc. provides engineering services to a broad range of industrial clients throughout the world. Services include studies, design, project management, construction services, planning, engineering analysis, third world expertise and prototype development.

The Company offers a wide range of engineering disciplines which include aerospace, mechanical, chemical and process, structural/civil, electrical, computer, public works, and control and instrumentation.

Wardrop personnel have expertise in space systems engineering, aerospace ground support equipment, robotics and remote handling, specialized equipment, computer modelling and environmental test facilities.

At this time Wardrop Engineering is seeking additional aerospace opportunities to further expand and develop its aerospace division.

Featured Equipment:
Vax 11-750, 2 MicroVax's. Personal Computers (1-386, 6-AT's and 2-XT's) and AUTOCAD Systems.

Major Clients:
The City of Winnipeg, National Defence, National Research Council, SPAR Aerospace, SED Systems, MBB/ERNO

Subsidiaries: 3

Employees: 170 (100 in Winnipeg)

For more information on the Manitoba Aerospace Technology Program or additional copies of this directory contact:

Manitoba Aerospace Technology Program
430 - 155 Carlton Street
Winnipeg, Manitoba R3C 3H8
Phone: (204) 945-0127
FAX: (204) 957-1793
Telex: 07-587833